
UNIVERSITI SAINS MALAYSIA

Second Semester Examination
Academic Session 2008/2009

April/Mei 2009

BGT 213/3 - Plant Pathology
[Patologi Tumbuhan]

Duration: 3 hours
[Masa : 3 jam]

Please ensure that this examination paper contains SEVEN printed pages before you begin the examination.

[Sila pastikan bahawa kertas peperiksaan ini mengandungi TUJUH muka surat yang bercetak sebelum anda memulakan peperiksaan ini.]

Instructions: Answer **FIVE** (5) out of **SIX** (6) questions, in English or Bahasa Malaysia. Each question carries 20 marks.

Arahan: Jawab **LIMA** (5) daripada **ENAM** (6) soalan yang diberikan dalam Bahasa Inggeris atau Bahasa Malaysia. Tiap-tiap soalan bernilai 20 markah.]

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1. One day a farmer came to ask you about a disorder in his cultivated plants. In order to diagnose this disorder precisely, how do you prepare the protocol? Write a series of procedures to diagnose the disorder.

(20 marks)

2. Viruses, viroids, mollicutes, fastidious bacteria and protozoa can not penetrate the host plant but are transmitted through wounds created by vectors or tools. Explain the mode of penetration in case of fungi and bacteria.

(20 marks)

3. [a] Explain the following technical terms.

[i] Heteroecism. (2 marks)

[ii] T toxin. (2 marks)

[iii] Formation of cork layer. (2 marks)

[iv] Tyloses. (2 marks)

[v] Phytoalexin. (2 marks)

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- [b] Based on these figures below, explain the behavior of the pathogen and its infection related to the environmental condition.

(10 marks)

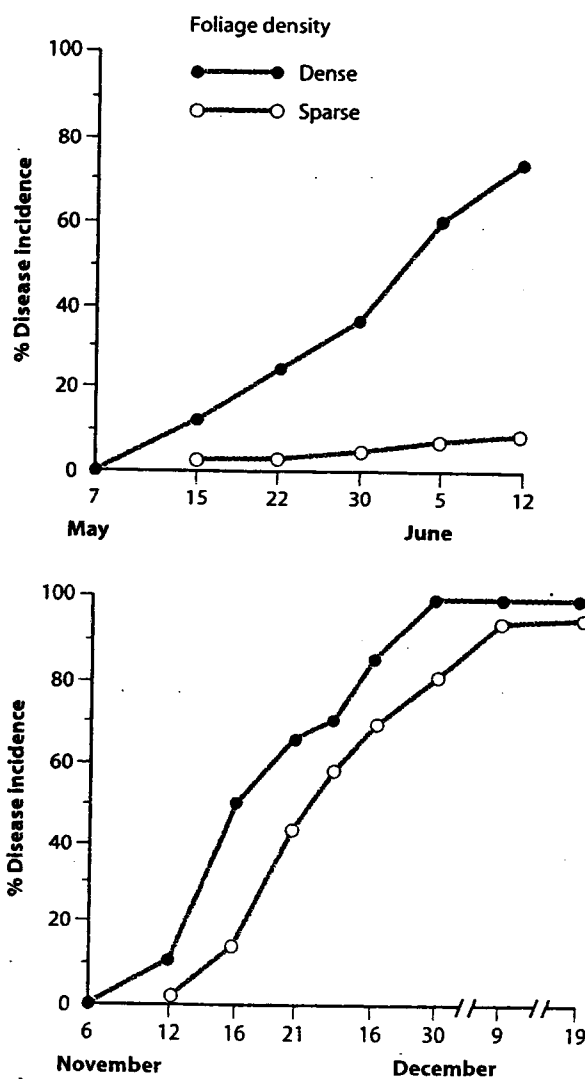


FIGURE 8-10 Effect of foliage density on development of *Phytophthora infestans* during a period of partly favorable weather (May-June) and of very favorable weather (November-December). [From Rotem and Ben-Joseph (1970). *Plant Dis. Rep.* 54, 768-771.]

4. [a] The following are **FIVE** (5) disease symptoms that cause growth and distortion of plant parts. Write a brief description of each symptom and provide illustration where ever possible.

- [i] Gall.
- [ii] Warts.
- [iii] Club root.
- [iv] Witches broom.
- [v] Leaf curls.

(10 marks)

- [b] Write short notes on methods to control vascular wilt of banana (Panama disease).

(10 marks)

5. Write an essay on soft rot disease caused by *Rhizopus* sp.

(20 marks)

6. [a] Describe briefly the penetration and intercellular development of bacterial infection on host plant.

(10 marks)

- [b] Insect vectors consist of persistent and non-persistent types. Write short notes on how the persistent type transmit virus into the host.

(10 marks)

1. Pada suatu hari, seorang petani datang bertanya mengenai suatu disorder atau gangguan terhadap tanamannya. Dalam usaha untuk mendiagnosis disorder tersebut, bagaimanakah anda menyediakan protokolnya. Tulis satu siri kaedah untuk mendiagnosis disorder tersebut.

(20 markah)

2. Virus, viroid, molikutes, bakteria fastidius dan protozoa tidak mampu menembusi tumbuhan perumahannya tetapi ditularkan melalui luka yang dibuat oleh vektor atau alat pertanian. Terangkan mod (atau cara) kemasukan kulat dan bakteria.

(20 markah)

3. Huraikan istilah teknikal yang berikut:

[i] Heteroesisme.

(2 markah)

[ii] Toxin T.

(2 markah)

[iii] Pembentukan lapisan gabus.

(2 markah)

[iv] Tilosa.

(2 markah)

[v] Fitoaleksin.

(2 markah)

- [b] Berdasarkan kepada rajah-rajah yang berikut, huraikan tingkah-laku patogen dan jangkitannya yang berkaitan dengan keadaan persekitaran.

(10 markah)

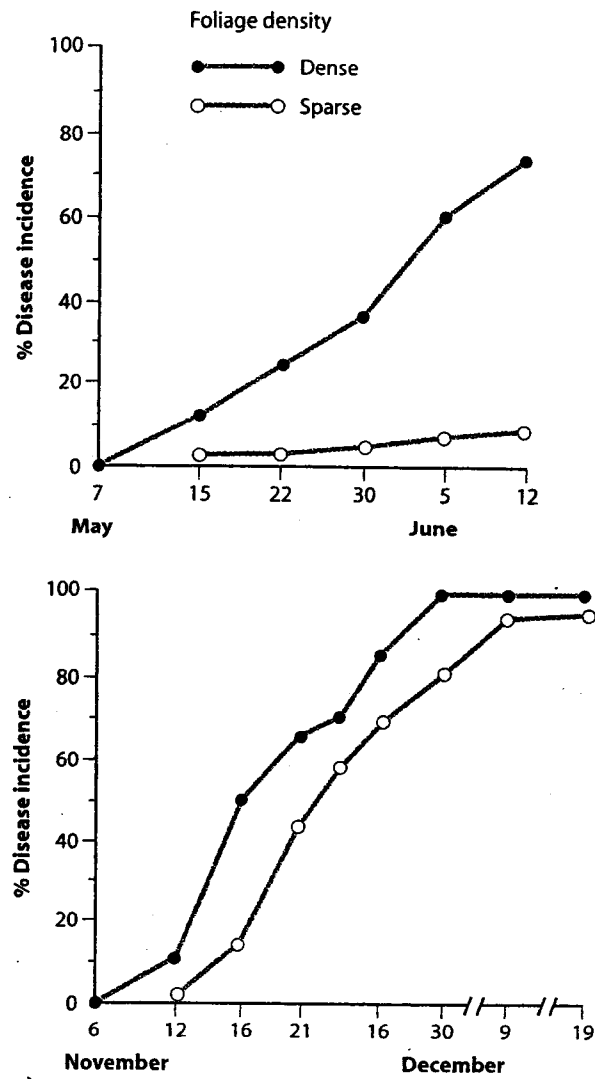


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4. [a] Berikut adalah **LIMA** (5) gejala penyakit yang menyebabkan pertumbuhan dan kecacatan pada bahagian tumbuhan. Tuliskan huraian ringkas tentang setiap simptom tersebut dan berikan ilustrasi di mana mungkin.

- [i] Gall.
- [ii] Ketuat.
- [iii] Akar belantan.
- [iv] Penyapu.
- [v] Ikal daun.

(10 markah)

- [b] Tuliskan nota pendek tentang kaedah pengawalan penyakit layu vaskular pada pisang (penyakit Panama).

(10 markah)

5. Tuliskan esei mengenai penyakit reput lembut yang disebabkan oleh *Rhizopus* sp.

(20 markah)

6. [a] Huraikan secara ringkas tentang penembusan dan perkembangan interselular oleh bakteria terhadap tumbuhan perumah.

(10 markah)

- [b] Vektor serangga terdiri dari jenis persisten (tekal) dan tidak persisten. Tuliskan nota pendek bagaimana serangga jenis persisten menularkan virus ke dalam perumah.

(10 markah)